AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF THE CLAIMS:

Claims 1-13 (Cancelled).

14. (New) A method of measuring local similarities between a number P of seismic trace cubes obtained by seismic exploration of a single volume of an underground zone, comprising:

a) extracting, from each seismic trace cube, a volume neighborhood centered on a single current point including a set of seismic traces;

b) applying a generalized principal component analysis technique to groups of seismic attributes extracted from the seismic traces of the volume neighborhood so as to form synthetic variables;

c) determining a coherence value from the synthetic variables, which is assigned to a current point;

d) repeating steps a) to c) for each point common to the seismic trace cubes; and

e) grouping all of the coherence values to form a coherence cube showing the local similarities.

15. (New) A method as claimed in claim 14, wherein:

for each point, the coherence value is the mean value of the squares of correlations between a number K of the synthetic variables and projections thereof on cubes in a neighborhood of the current point.

16. (New) A method as claimed in claim 15, wherein:

a value of the number K of synthetic variables is determined as a smallest number of synthetic variables allowing reaching a variance threshold explained by the projections of the synthetic variables on the cubes in the neighbourhood of the current point with the variance threshold being previously selected.

17. (New) A method as claimed in claim 14, wherein:

the number K of synthetic variables is selected depending on correlations thereof with groups of attributes associated with the volume neighborhood of the current point, the coherence value assigned to the current point being equal to a weighted sum of squares of the correlations between considered synthetic variables and the projections thereof on the cubes in the neighborhood of the current point.

18. (New) A method as claimed in claim 15, wherein:

the number K of synthetic variables is selected depending on correlations thereof with groups of attributes associated with the volume neighborhood of the

current point, the coherence value assigned to the current point being equal to a weighted sum of squares of the correlations between considered synthetic variables and the projections thereof on the cubes in the neighborhood of the current point.

19. (New) A method as claimed in claim 16, wherein:

the number K of synthetic variables is selected depending on correlations thereof with groups of attributes associated with the volume neighborhood of the current point, the coherence value assigned to the current point being equal to a weighted sum of squares of the correlations between considered synthetic variables and the projections thereof on the cubes in the neighborhood of the current point.

20. (New) A method as claimed in claim 17, wherein:

for a determined correlation value, a weighting value is selected which is a variance percentage explained by a projection of the synthetic variable on a corresponding group divided by a sum of variances of all the projections of the synthetic variables considered for a same group.

21. (New) A method as claimed in claim 18, wherein:

for a determined correlation value, a weighting value is selected which is a variance percentage explained by a projection of the synthetic variable on a

corresponding group divided by a sum of variances of all the projections of the synthetic variables considered for a same group.

22. (New) A method as claimed in claim 19, wherein:

for a determined correlation value, a weighting value is selected which is a variance percentage explained by a projection of the synthetic variable on a corresponding group divided by a sum of variances of all the projections of the synthetic variables considered for a same group.

23. (New) A method as claimed in claim 14, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

24. (New) A method as claimed in claim 15, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken

into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

25. (New) A method as claimed in claim 16, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

26. (New) A method as claimed in claim 17, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

27. (New) A method as claimed in claim 18, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

28. (New) A method as claimed in claim 19, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

29. (New) A method as claimed in claim 20, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in

the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

30. (New) A method as claimed in claim 21, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

31. (New) A method as claimed in claim 22, wherein:

a threshold is set on a variance percentage explained by the projections of synthetic variables on cubes in the neighborhood of the current point which is taken into account, the coherence value being equal to a weighted sum of squares of the correlations between the synthetic variables and projections thereof on the cubes in the neighborhood of the current point, so that a number of synthetic variables accounted for allows the threshold to be reached.

32. (New) A method as claimed in claim 23, wherein:

for a correlation value, a weighting value is selected which is P times a variance threshold selected.

33. (New) A method as claimed in claim 14, wherein:

a volume neighborhood is extracted from seismic trace cubes obtained after a 3D seismic survey with each cube corresponding to a same incidence angle.

34. (New) A method as claimed in claim 14, wherein:

a volume neighborhood is extracted from seismic trace cubes obtained after a 3D seismic survey with each cube corresponding to a same offset.

35. (New) A method as claimed in claim 14, wherein:

a volume neighborhood is extracted from seismic trace cubes obtained by successive seismic explorations of the zone.

36. (New) A method as claimed in claim 14, wherein:

a volume neighborhood is extracted from residue cubes obtained after a prestack stratigraphic inversion.

37. (New) A method as claimed in claim 14, wherein:

a volume neighborhood is extracted from residue cubes obtained after a poststack stratigraphic inversion.

38. (New) A method as claimed in claim 14, wherein:

a volume neighborhood is extracted from prestack or poststack inverted trace cubes and from residue cubes.